



- New 19" chassis with keypad for test/reset, operation and configuration
- Very high light sensitivity < 1 Lux (new!)
- Fast arc response time < 2µs
- Up to 16 arc detector modules with FSMA input for fiber optic cable
- Photo detector voltage monitor (new!)
- System interface modules with up to 4 logic programmable interlocks (new!)
- Option (new!): adjustable sensitivity and auto-reset time via USB interface
- Option (new!): Web browser access via Ethernet and LAN interface

1. Product Introduction

The new generation **ARC4 2.0 optical arc detector system** detects light produced by an arc with very *short response time*, using a *high-sensitivity, wide-spectrum* photodiode in the optical input stage. It is designed to effectively protect high-power RF equipment from damage due to unwanted electrical breakdown, corona discharge and arcing.

The modular system is available with up to 16 *arc detector modules* cased in a 19" rack mountable chassis. Function keypads at the front panel as well as remote control interfaces allow testing, resetting and customizing of modules and system. Arc detection is signalled in three ways: (1) visually indicated by keypad LEDs, (2) via a digital output signal as TTL and Open Collector, and (3) via a digital optical output signal. The output signals are typically used for interlock purpose in high-power RF systems. An analog output provides access to the photo voltage of each detector for monitoring and analysis purpose. For safety reason the device comes with a power/system failure signal.

For making use of its full functionality ARC4 can be complemented by up to two *system interface modules*. These modules allow customer programmable logical combinations of the electrical output signals provided by the arc detector modules. Two independent global arc output signals (GLBARC) are available on each interface module for interlocking two separate RF systems. Each GLBARC output signal can form a different configurable logic (AND/OR). These signals are available as TTL or O.C. On this base, one ARC4 system is capable of forming a total of four interlock signals and thus to interlock up to four separate RF systems. The coincidental arc detection scheme, an AND connection of two arc signals at the same observation point, increases the reliability of arc detection in a radiative environment. Given its modularity and flexibility, ARC4 provides a high degree of customizing and allows an easy system upgrade and replacement.

As an option to be ordered separately, the *ARC4 2.0 USB software interface* enables an adjustment of light sensitivity (threshold level) and auto-reset time for customized needs.

The high-end software option is our *ARC4 2.0 LAN Web Interface*. A web server provides computer access to ARC4 via a web browser using a local Ethernet or LAN connection. The web interface allows (1) complete system configuration and parameter settings, (2) scanning the system, component and signal status, (3) remote control of the system, (4) photo voltage monitoring as well as (5) alarm, event and status logging.

Low-loss fiber optic cables are used to transmit/send light to/from the ARC4 system unit. Cables are available in different standard length as accessories.

2. Product Features	Description
Arc Detector Module	16 per system max.
■ Optical arc input	1x FSMA
■ Optical arc output (digital)	1x FSMA
■ Electrical arc output (digital)	1x TTL and 1x Open Collector
■ Electrical arc output (analog)	1x photo voltage of detector
■ Visual arc/status indication	LEDs (red/ green)
■ Optical self-test/ reset function	via keypad or remote control
■ Reset options	manual or auto-reset
■ Signal polarity setting	high/low signal for arc
■ Power failure signal	1x open collector
■ Support of external test function	via relay output
■ System OK and system alarm signal	2x Relay
System Interface Module	2 per system max.
■ Global arc output signal (GLBARC)	2x GLBARC system interlock signal per module
■ Programmable GLBARC logic	for each interlock signal
■ Reset options	manual or auto-reset

3. Optional Product Feature	Description
USB Software Interface	
■ Adjustable light sensitivity (threshold)	via USB Hyperterminal
■ Adjustable auto-reset time	via USB Hyperterminal
LAN Web Interface	
■ Web browser access	via Ethernet
■ Network connection	via Ethernet
■ System configuration	via Ethernet
■ Parameter settings	via Ethernet
■ System, component & signal status	via Ethernet
■ Remote control	via Ethernet
■ Photo voltage monitoring	via Ethernet
■ Alarm, event and status logging	via Ethernet

4. Main Characteristics		Description
Wavelength of optical input detector		400 nm to 1000 nm
Wavelength of optical output signal		880 nm
Light intensity for detection		< 1 Lux
Light sensitivity level (threshold)		20 mV (default), adjustable as an software option
Response time		< 2 µs, for typical arc light < 3 µs, factory tested with an LED light source at 880 nm
Auto reset time		1 s (default setting) 0.1 ms to 2 s, configurable as an software option
Electrical signal ratings		
	TTL	> 2.4 V (high), < 0.7 V (low)
	Open Collector	50 V, 100 mA max.
	Remote inputs	5 V, 10 mA, 0.5 s
Mains power supply		230 VAC / 50 Hz and 110 VAC / 60 Hz, universal internal fuse 1A, time delay
Power consumption		< 30 VA
Temperature range (ambient)		
	Operating	0°C to +50°C
	Storage	-40°C to +85°C
Relative humidity		<75%, no condensation
Dimensions		19" case, 3 HE, 485 x 145 x 320 mm ³
Weight		5 kg approximately, when fully equipped
Safety Class		IP40

5. Interfaces Arc Detector Module		Description
5.1 Arc Detector Module		
Optical arc input		
	ARC IN	FSMA, ¼"-36 UNS 2A male thread
Optical arc outputs		
	ARC OUT	FSMA, ¼"-36 UNS 2A male thread
CONTROL SIGNALS I/O		DB-15 female connector
Pin No.:	Signal Description:	Signal Level:
1	Arc Out Open Collector	Open collector
2	-	-
3	Power Fail Out	Open collector
4	Arc Out TTL	TTL
5	Relay - Test external, output	Relay contact 30 VDC / 1 A
6	Relay - Test external, output	Relay contact 30 VDC / 1 A
7	Photo-detector voltage +UFD	mV voltage
8	-	-
9	VCC out	+5 VDC, 100 mA
10	Test internal, remote input	5 V, 10 mA (opto-input)

11	-	-
12	Test external, remote input	5 V, 10 mA (opto-input)
13	Reset, remote input	5 V, 10 mA (opto-input)
14	0 V out	0 V
15	GND photo voltage	GND

5.2 System Interface Module

CONTROL SIGNALS X1 DB-9 female connector

Pin No.:	Signal Description:	Signal Level:
1	GLBARC 1 Open Collector	Open collector
2	Power Fail Out	Open collector
3	Relay - Test ext. 1, output	Relay contact 30 VDC / 1 A
4	Reset 1, remote input	5 V, 10 mA (opto-input)
5	0 V out	0 V
6	Relay - Test ext. 1, output	Relay contact 30 VDC / 1 A
7	GLBARC 1 TTL	TTL
8	VCC out	+5 VDC, 100 mA
9	Test external 1, remote input	5 V, 10 mA (opto-input)

CONTROL SIGNALS X2 DB-9 female connector

Pin No.:	Signal Description:	Signal Level:
1	GLBARC 2 Open Collector	Open collector
2	Power Fail Out	Open collector
3	Relay - Test ext. 2, output	Relay contact 30 VDC / 1 A
4	Reset 2, remote input	5 V, 10 mA (opto-input)
5	0 V out	0 V
6	Relay - Test ext. 2, output	Relay contact 30 VDC / 1 A
7	GLBARC 2 TTL	TTL
8	VCC out	+5 VDC, 100 mA
9	Test external 2, remote input	5 V, 10 mA (opto-input)

5.3 CPU Module

USB	USB Type B, USB 2.0
LAN (Ethernet)	RJ45, 10/100MBit

5.4 Power Supply Module

MAINS	IEC-60320-C14, male	
RELAYS	M8 connector	
Pin No.:	Signal Description:	Signal Level:
1	REL1 - System OK	Relay contact 30 VDC / 1 A
2	REL1 - System OK	Relay contact 30 VDC / 1 A
3	REL2 - Arc Alarm	Relay contact 30 VDC / 1 A
4	REL2 - Arc Alarm	Relay contact 30 VDC / 1 A

6. Conformity		Description
■ CE Directives		
	2014/35/EC	Low Voltage
	2014/30/EC	EMC
	2011/65/EC	RoHS

7. Ordering Code for System Configuration

A4-2-SYS-00 - X_D - X_I ARC4 - Optical Arc Detector System 2.0 (config. with modules)

Variable	Description	Value Options
X _D	No. of arc detector modules A4-2-ADM-00	16 max.
X _I	No. of system interface modules A4-2-SIM-00	2 max.

8. Accessories (included)	Description
A4-2-MAC-00	ARC4 - Mains cable 2m, IEC-60320-C13
A4-2-M8C-00	ARC4 - M8 Connector
A4-2-DCK-00	ARC4 - Detector Module Connector DB-15
A4-2-ICK-00	ARC4 - Interface Module Connector Kit DB-9

9. Spare Parts	Description
A4-2-SYS-00-0-0	ARC4 - Optical Arc Detector System 2.0 (base unit only)
A4-2-ADM-00	ARC4 - Arc Detector Module 2.0
A4-2-SIM-00	ARC4 - System Interface Module 2.0
A4-2-CPU-00	ARC4 - CPU Module 2.0
A4-2-PS-00	ARC4 - Power Supply Module 2.0
A4-2-CP-00	ARC4 - Cover Plate 2.0
A4-2-USB-00	ARC4 - USB Software Interface 2.0 (Option)
A4-2-LAN-00	ARC4 - LAN Web Interface 2.0 (Option)

Rev.	Remark	Date	Name
00	Initial	14.11.2017	C. Weil